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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/722,031	11/25/2003	Philip Orlik	MH-5133	6510

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EXAMINER	
KANG, SUK JIN	

ART UNIT	PAPER NUMBER
2616	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/722,031	ORLIK ET AL.	
	Examiner	Art Unit	
	Suk Jin Kang	2616	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *25 November 2003*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-12* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-12* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *25 November 2003* is/are: a)☐ accepted or b)☒ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *11/25/03*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Information Disclosure Statement

1. The information disclosure statement submitted on November 25, 2003 has been considered by the Examiner and made of record in the application.

Drawings

2. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they include the following reference character(s) not mentioned in the description: 104 in Figure 1. The drawings are also objected to because: 485 in Figure 4 should read "Discard Request Packet".

3. Corrected drawing sheets in compliance with 37 CFR 1.121(d), or amendment to the specification to add the reference character(s) in the description in compliance with 37 CFR 1.121(b) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Objections

4. **Claims 1, 5, 11,and 12** are objected to because of the following informalities:

a) On line 6 of claim 1, insert --to-- after "according";

b) On line 2 of claim 5, insert --table-- after "routing";

c) On line 8 of claim 11, insert --to-- after "according";

d) On line 8 of claim 12, insert --to-- after "according";

Appropriate correction is required. For purposes of applying prior art, all claims above will be read with the suggested corrections made to the claim.

Claim Rejections - 35 USC § 112

5. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

6. **Claim 2** is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 2 recites the limitation "the a particular route" in line 3. There is insufficient antecedent basis for this limitation in the claim. Appropriate correction is required. For purposes of applying prior art, the claim will be read as "the particular route".

Claim Rejections - 35 USC § 102

7. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

8. **Claims 1-8 and 12** are rejected under 35 U.S.C. 102(e) as being anticipated by **Stanforth et al.** (U.S. Patent # 7,151,769 B2).

Consider **claim 1**, Stanforth et al. discloses a method for maximizing residual power along routes in a wireless network including a plurality of battery operated nodes (10, figure 3, figure 8), comprising: discovering a plurality of routes from a destination node to a source node via intermediate nodes of the network (column 6 lines 4-15 and 51-64); measuring a residual power in the battery of each intermediate node (column 6 lines 51-67, column 7 lines 1-7); determining a power cost associated with each route according to the residual power of the intermediate nodes (column 12 lines 65-67, column 13 lines 1-3 and 29-41); and selecting a particular route for transferring data from the source node to the destination node, the particular route having a least power cost (column 6 lines 51-67, column 7 lines 1-7 and 41-48).

Consider **claim 2**, and as applied to claim 1, Stanforth et al. discloses the method further comprising: determining a delay cost associated with each route (column

6 lines 45-50, column 10 lines 23-26); and selecting the particular route having a least delay cost (column 10 lines 36-52).

Consider **claim 4**, and as applied to claim 1, Stanforth et al. discloses the method in which the network is ad-hoc (column 6 lines 4-10).

Consider **claim 5**, and as applied to claim 1, Stanforth et al. discloses the method further comprising: storing a routing table in each node (column 6 lines 51-65).

Consider **claim 6**, and as applied to claim 1, Stanforth et al. discloses the method further comprising: quantizing the residual power to a power level to determine the power cost (column 12 lines 65-67, column 13 lines 1-19 and 29-41).

Consider **claim 7**, and as applied to claim 6, Stanforth et al. discloses the method further comprising: participating in the route if the power level is a least power level; not participating in the route if the power level is a highest level; and participating in the route if the power level is an intermediate power level, and increasing the power cost according to the power level (column 7 lines 7-31, column 9 lines 5-18, column 10 lines 53-67).

Consider **claim 8**, and as applied to claim 6, Stanforth et al. discloses the method in which an initial power of an n^{th} node is E joules, and the residual power in the n^{th} node at time t is R(t) joules, and the power cost for using n^{th} node as an intermediate node is P(n), and the power level L(t) of the n^{th} is determined by if $R(t) \leq E * \alpha$, then $L(t) = 3$; else if $E * \alpha < R(t) \leq E * \beta$, then $L(t) = 2$; else if $E * \beta < R(t) \leq E * \gamma$, then $L(t) = 1$; else $L(t) = 0$, where α, β, and γ are numbers less than 1.0 and monotonically increasing according to $\alpha < \beta < \gamma$ (column 8 lines 40-58, column 9 lines 16-55).

Consider **claim 12**, Stanforth et al. discloses a wireless network including a plurality of battery operated nodes (10, figure 3, figure 8), comprising: means for discovering a plurality of routes from a destination node to a source node via intermediate nodes of the network (column 6 lines 4-15 and 51-64); means for measuring a residual power in the battery of each intermediate node (column 6 lines 51-67, column 7 lines 1-7); means for determining a power cost associated with each route according to the residual power of the intermediate nodes (column 12 lines 65-67, column 13 lines 1-3 and 29-41); and means for selecting a particular route for transferring data from the source node to the destination node, the particular route having a least power cost (column 6 lines 51-67, column 7 lines 1-7 and 41-48).

Claim Rejections - 35 USC § 103

9. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the Examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the Examiner to

consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

10. **Claims 3 and 9-11** are rejected under 35 U.S.C. 103(a) as being unpatentable over **Stanforth et al.** (U.S. Patent # 7,151,769 B2) in view of **Cain** (U.S. Patent # 6,961,310 B2).

Consider **claim 3**, and as applied to claim 1, Stanforth et al. discloses the claimed invention, but may not expressly disclose the method further comprising: associating a time of discovery with each route; and selecting the particular route having a most recent time of discovery.

However, in the same field of endeavor, Cain discloses the method further comprising: associating a time of discovery with each route; and selecting the particular route having a most recent time of discovery (column 3 lines 50-56, column 5 lines 46-52, column 7 lines 44-49; thus the timer can be used to determine the time of discovery as well as to select the most recently discovered route).

Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to incorporate a time of discovery as taught by Cain with the method as disclosed by Stanforth et al. for the purpose of efficiently routing packets through an ad-hoc network.

Consider **claim 9**, and as applied to claim 1, Stanforth et al. discloses the claimed invention, furthermore, Cain discloses the method in which the discovering uses dynamic source routing (column 5 lines 14-17, column 6 lines 21-25).

Consider **claim 10**, and as applied to claim 1, Stanforth et al. discloses the claimed invention, furthermore, Cain discloses the method in which the discovering uses ad-hoc on-demand distance vector routing (column 5 lines 14-17, column 6 lines 21-25).

Consider **claim 11**, Stanforth et al. discloses a method for maximizing residual power along routes in a wireless network including a plurality of nodes (10, figure 3, figure 8), each node having an address and a battery, comprising: measuring a residual power in the battery of the intermediate node (column 6 lines 51-67, column 7 lines 1-7); determining a power cost associated with each route according to the residual power of the intermediate nodes (column 12 lines 65-67, column 13 lines 1-3 and 29-41); repeating the broadcasting, receiving, measuring, determining and the sending until the request packet reaches the destination node (column 12 lines 44-67); constructing a route in a routing table in the source node from the reply packets, the route having the associated power cost (column 6 lines 51-65); selecting a particular route for transferring a data packet from the source node to the destination node, the particular

route having a least power cost (column 6 lines 51-67, column 7 lines 1-7 and 41-48), but may not expressly disclose broadcasting a request packet, the request packet including the address of a source node and the address of a destination address; receiving the request packet in an intermediate node; and sending a reply packet to the source node, the reply packet including the address of the intermediate node.

However, in the same field of endeavor, Cain discloses broadcasting a request packet, the request packet including the address of a source node and the address of a destination address (102, figure 5, column 5 lines 8-17); receiving the request packet in an intermediate node (column 5 lines 21-33); and sending a reply packet to the source node, the reply packet including the address of the intermediate node (column 5 lines 34-44).

Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to incorporate a request and reply packet as taught by Cain with the method as disclosed by Stanforth et al. for the purpose of efficiently routing packets through an ad-hoc network.

Conclusion

11. Any response to this Office Action should be **faxed to** (571) 273-8300 **or mailed to**:

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Hand-delivered responses should be brought to

Customer Service Window
Randolph Building
401 Dulany Street
Alexandria, VA 22314

12. Any inquiry concerning this communication or earlier communications from the Examiner should be directed to Suk Jin Kang whose telephone number is (571) 270-1771. The examiner can normally be reached on Monday - Friday 8:00-5:00 EST.

If attempts to reach the Examiner by telephone are unsuccessful, the Examiner's supervisor, Chau Nguyen can be reached on (571) 272-3126. The fax phone number for the organization where this application or proceeding is assigned is (571) 273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free) or 703-305-3028.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist/customer service whose telephone number is (571) 272-2600.

Suk Jin Kang

CHAU NGUYEN
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2600